Pilot Weather Needs:
Understanding, Quantification, Value

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AMA Market Study for GRC

◆ **No Weather Standards**

◆ **Business Model for Wx Service Providers**

◆ **Data Link Architecture Design**

◆ **Providing Value & Benefit for End Users/Encourage Equipage**

Problem

◆ **Poor Understanding of Weather 'Need'**

- – **User not Provider Perspective**
- – **Differing Capabilities/Behavior (Legacy Aircraft, Micro Jets, Quiet Supersonic Jets, UAV, etc.)**
- – **RVSM, Free Flight, Capacity, other initiatives driving changes?**

◆ **Poor Understanding of "Gaps"**

- – **Compare where we are to where we need to go**
- – **Performance Measurements that Mean Something to end user**

◆ **Lack of Direction/Achievable Goals**

- – **How "Good" is "Good Enough"?**
- – **Measured Improvements – *"HOW DO I MEASURE SUCCESS"?***

History

◆ **Previous Studies**

– Plentiful but missing the mark?

◆ **Weather Needs Derivation**

– **Meteorologists!**

– **Technology!**

– **Phase of Flight – better but….**

– *<u>Operational Decisions!!!!!</u>*

☞ **Wx Needs Different for Each Decision Maker**

Goals

◆ **Reach Conclusions about Weather Informational Needs and Achievable Requirements**

- – **Design for all classes of users**
- – **No Weather (Domain-Specific) Free Flight CONOPS (RTCA too High) – With Linkage to Aviation Weather MNS**
- – **Bandwidth requirements (the "Right" Products)**
- – **Communication system requirements**
- – **Inputs towards Flight Deck display (HF translation)**
- – **"Intelligent Agents" – Pilot Action Plan**

Methodology

◆ **Leverage Previous Work**
- Center TMU weather needs
- Center convective requirements

◆ **Assess Current Capabilities and Identify Gaps**
- Establish baseline
- Re-Evaluate Requirements and modify the CONOPS
  - ☞ See Progress and Evaluate Towards Goals
  - ☞ Set Priorities & Fund; Design Roadmap
- Leverage RTVS and Other(?) Techniques

◆ **Determine 'Achievable' and 'Optimum'**
- Measured performance; Perception is EVERYTHING!
- Construct for data link architectures
- Construct for HF "best fit" for Operational Use
- Module for Integrated Flight Deck > Intelligent Agents?

Importance of Work

- **Assist NASA in Defining Architectures and Achieving Maximum End User Value/Benefit on the Flight Deck**
  - Wx information/product integrity and use
  - Validate wx to flight deck CONOPS

- **Potential Influence to RTCA Initiatives**
  - Basis for product information standards
  - DO-267A
  - Validation/Guidance for SC 195, 198, 186

- **FAA Benefits**
  - FIS-DL
  - ASD
  - AIM
  - AC modifications: Flight Standards/Certification